

What is claimed is:

1. An evaporator for use in a refrigerated display case having a display length, the evaporator comprising:

5 first and second independent evaporator coils co-extensive along the display length, each evaporator coil operable in a cooling cycle and a defrost cycle in alternating time periods in such a manner as to maintain a substantially constant cooling temperature throughout the refrigerated display case, even during a defrost cycle.

2. The evaporator of claim 1 further comprising:

10 first and second independent sets of cooling fins mounted to the first and second evaporator coils, respectively, for absorbing heat when a refrigerant is circulated and evaporates in the evaporator coils, thus cooling the display case.

3. The evaporator of claim 1 wherein each of the first and second independent evaporator coils comprises an inlet end for receiving at least one feed of refrigerant from an  
15 independently controlled distributor line.

4. The evaporator of claim 1 wherein each of the first and second independent evaporator coils comprises an outlet end for returning gas refrigerant to a return for  
20 subsequent condensation and recirculation to the evaporator coil from which it originated.

5. The evaporator of claim 1 further comprising:

an insulating member, provided between the first and second independent evaporator coils, for minimizing effects of a change in temperature from a defrosting evaporator coil on a  
25 non-defrosting evaporator coil.

6. The evaporator of claim 5 wherein the insulating member is made of a plastic.

7. The evaporator of claim 5 wherein the insulating member is made of steel.

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8. A cooling system for use in a refrigerated display case having a display length, the cooling system comprising:

an evaporator having first and second independent evaporator coils co-extensive along the display length, each evaporator coil operable in a cooling cycle and a defrost cycle in alternating time periods in such a manner as to maintain a substantially constant cooling temperature throughout the refrigerated display case, even during a defrost cycle; and

a common return connected to the first and second evaporator coils for receiving ambient air to be cooled by the evaporator.

9. The cooling system of claim 8 further comprising:

first and second flow control valves, in communication with the first and second independent evaporator coils, respectively, for independently controlling refrigerant flow to the first and second independent evaporator coils.

10. The cooling system of claim 9 wherein the first and second flow control valves are solenoid valves.

11. The cooling system of claim 8 further comprising:

first and second filters, in communication with the first and second independent evaporator coils, respectively, for independently preventing impurities from entering into the first and second independent evaporator coils.

12. The cooling system of claim 8 further comprising:

first and second shutoff valves, in communication with the first and second independent evaporator coils, respectively, for manually stopping refrigerant flow to the first and second independent evaporator coils.

13. The cooling system of claim 8 further comprising:

first and second flow regulating devices, in communication with the first and second independent evaporator coils, respectively, for regulating refrigerant flow to the first and

second independent evaporator coils.

14. The cooling system of claim 13 wherein the flow regulating devices are thermostatic expansion valves.

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15. The cooling system of claim 14 wherein the expansion devices are thermostatic expansion valves.

16. The cooling system of claim 8 further comprising:

10 first and second distributors, in communication with the first and second independent evaporator coils, respectively, for equally distributing refrigerant flow to the first and second independent evaporator coils.

17. The cooling system of claim 8 further comprising:

15 a controller for scheduling and controlling the alternating defrost cycles of the first and second independent evaporator coils.

18. A cooling system for use in a plurality of refrigerated display cases each having a display length, the cooling system comprising:

20 a plurality of evaporators connected in parallel, each evaporator having first and second independent evaporator coils co-extensive along the display length, each evaporator coil operable in a cooling cycle and a defrost cycle in alternating time periods in such a manner as to maintain a substantially constant cooling temperature throughout the refrigerated display case, even during a defrost cycle,

25 the first independent evaporator coils of each of the plurality of evaporators being connected to one another and defining a set of first evaporator coils, and the second independent evaporator coils of each of the plurality of evaporators being connected to one another and defining a set of second evaporator coils;

30 first and second flow control valves, in communication with the sets of first and second evaporator coils, respectively, for independently controlling refrigerant flow to the sets of first and second evaporator coils; and

a common return connected to the sets of first and second evaporator coils for receiving ambient air to be cooled by the evaporator.

19. The cooling system of claim 18 wherein the first and second flow control valves are solenoid valves.

20. A defrosting method for a refrigerated display case having first and second independent evaporator coils, the evaporator coils being co-extensive along a display length of the refrigerated display case, the method comprising:

cooling the first and second independent evaporator coils together;

defrosting the first independent evaporator coil while cooling the second independent evaporator coil, the second independent evaporator coil substantially covering the entire length of a display case of the refrigeration system;

cooling the first and second independent evaporator coils together; and

defrosting the second independent evaporator coil while cooling the first independent evaporator coil, the first independent evaporator coil substantially covering the entire length of a display case of the refrigeration system.